

REMARKS

Claims 17-18 and 20-36 are pending in the current application. Claims 17-18 and 20-22 have been allowed and claims 26, 28 and 33 have been objected to. Reconsideration of the present claims is respectfully requested in view of the following remarks.

Rejection of Claims 23-25, 29-32, 34 and 36

The Examiner rejects claims 23-25, 29-32, 34 and 36 as allegedly being obvious in view of the combination of McKee (US 5,450,812), Takada (US 5,362,711) and Bloemen (US 5,695,863). Applicants respectfully traverse this rejection.

Claim 23 recites a method comprising, *inter alia*, selectively supplying activated oxygen, a cobalt atom flux, and an iron atom flux to a chamber. MBE is performed to epitaxially grow an inverse spinel-structured ferrite on a substrate from the oxygen, cobalt atom flux and iron atom flux and, as the ferrite epitaxially grows, occupying octahedral lattice positions on the ferrite with cobalt to provide the ferrite in a substantially thermodynamically stable state absent post-growth anneal.

The proposed combination of references, whether considered individually or in combination, neither teaches nor suggests this claimed method for at least the following reasons:

(1) No Motivation to Combine any of the Proposed References

The proposed combination of references, McKee/Takada/Bloemen, is improper as there is no motivation to combine McKee and Takada. Further, the modification of McKee with Bloemen would make McKee inoperable to achieve its purpose.

As recited in the MPEP at § 2143.01 "If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)." The Bloemen reference relied upon attempts to teach a first layer of CoO and a second layer of $\text{Co}_x\text{Fe}_{3-x}\text{O}_4$ which completely ignores McKee's purpose of providing alternate layers of single plane oxides. The Bloemen reference layers are inapposite of the McKee purpose.

(E.g., C. 2 ll. 5-35.; C. 3, ll. 12-16 and 35-42.) As such, not only is there no motivation to make the proposed combination, the proposed combination would actually render the McKee reference unsuitable for its purpose.

Furthermore, there is no indication that using the Bloemen reference to suggest a low temperature process would even work for the McKee reference purpose as McKee recites a *minimum* temperature of nearly double the Bloemen temperature. Accordingly, the proposed combination is improper. Likewise, the proposed combination of McKee and Takada is improper as was clearly set out in the October 24, 2002 Response To Office Action filed in the parent application.

(2) Proposed Combination Does not Teach or Suggest All Claim Limitations - No Ferrite is Necessarily Formed in a Thermodynamically Stable State

Further, contrary to the Examiner's contention, unlike the method recited in claim 23 where ferrite is formed in a substantially thermodynamically stable state in the absence of a post-growth anneal, the proposed combination does not teach or suggest such a formation.

McKee discloses a minimum temperature of 500° C and a pressure of about 2 to about 5×10^{-7} in order to obtain the growth desired (C. 7, ll. 19-52). It is improper to propose that the lack of teaching in the recited combination - a lower temperature and a particular pressure range - can be imported from what is taught by the present Applicants. Thus, changing such parameters in the proposed combination method (as taught only by Applicant and not the combination of references) and then asserting that the "combination method" necessarily would lead to a ferrite formed in a substantially thermodynamically stable state in the absence of a post-growth anneal is improper. In other words, the Examiner admits that the references do not teach the recited absence of an anneal (or the low temperature/low pressure), but indicates that if both the temperature and pressure were changed to be like that taught by the Applicants (Office action, p. 5) then the combination would necessarily form such a ferrite in the absence of a post-growth anneal. Clearly, making up for the deficiencies of the combined three references by proposing that if the combination was further modified using Applicants' own inventive method (e.g., citing Applicant's

temperatures and pressures) is improper. The references, whether combined or considered independently, do not teach or suggest a method that necessarily produces the recited formation of a ferrite in a substantially thermodynamically stable state in the absence of a post-growth anneal.

(3) Proposed Combination Does Not Teach or Suggest All Claim Limitations - No Inverse-Spinel Structured Ferrite is Necessarily Formed

There is no teaching or suggestion in the references, whether considered independently or in combination, that an inverse-spinel structured ferrite would be formed (with what is anyway an inconsistent and thus improper combination as discussed above). As mentioned above, changing the proposed combination to add in method parameters taken from Applicant's specification and then indicating an inverse-spinel structured ferrite would necessarily result, is improper. The references, whether combined or independent, do not teach or suggest a method that necessarily would produce the recited inverse-spinel structured ferrite.

Claims 24 and 25 are allowable over the art of record for the same reasons as set forth above for claim 23. In addition, claim 25 recites a temperature range (about 250° C to about 300° C) not contemplated by any of the disclosed references. In fact, the McKee reference teaches maintaining the substrate at a minimum of about 500° C and the suggestion that it can simply be lowered because Bloemen discloses a temperature of 302° C for forming completely different types of metal layers than does McKee (not single plane oxides as required in McKee), is improper. (Col. 7, ll. 45-51). Furthermore, the Examiner does not cite anywhere in the references where the recited temperatures (i.e., about 250° C to about 300° C) are disclosed. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. MPEP § 2143.03.

Claim 29 recites a method including, *inter alia*, individually controlling at least one of the cobalt atom flux and the iron atom flux with a spectroscopy detection system. Not only is claim 29 allowable over the art of record for the reasons set forth above in relation to claim 23, but also because none of the cited references, McKee, Takada, or Bloemen, teach or suggest individually controlling at least one of the cobalt atom flux and the iron atom flux with a

spectroscopy detection system. The valve disclosed in McKee is not in any manner equivalent to a spectroscopy detection system and we assume the Examiner is not proposing it is but there is no other indication in the Office action as to what aspect of these references the Examiner proposes teaches or suggests individually controlling at least one of the cobalt atom flux and the iron atom flux with a spectroscopy detection system.

Claims 30-32 and 34-36 are allowable for the same reasons as claim 29. In addition, claim 32 is allowable for the same reasons as set forth above in relation to claim 25.

Further, claim 34 recites separately individually controlling the cobalt and iron atom fluxes with a spectroscopy detection system. None of the cited references, McKee, Takada, or Bloemen, teaches or suggests such individual control using a spectroscopy detection system.

For all of the reasons set forth above, claims 23-25, 29-32, 34 and 36 are allowable over McKee, Takada, and/or Bloemen and Applicants respectfully request the Examiner withdraw his rejections.

Rejection of Claims 27 and 35

The Examiner rejects claims 27 and 35 as allegedly being obvious in view of the combination of McKee (US 5,450,812), Takada (US 5,362,711), Bloemen (US 5,695,863) and Lu (American Vacuum Society May/June 1995). Applicants respectfully traverse this rejection.

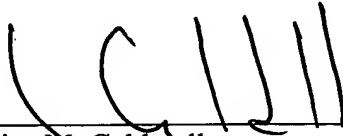
Claims 27 and 35 are allowable for the same reasons as set forth above in relation to claims 23 and 34. Thus, Applicants respectfully request that the Examiner withdraw his rejections.

If the Examiner has any further concerns regarding the claims of the present application, the Examiner is encouraged to phone the undersigned attorney.

Respectfully submitted,

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